

ABSTRACT

Multiple Catalyst System for Olefin
Polymerization and Polymers Produced Therefrom

This invention relates to a polymer comprising of one or more C3 to C40 olefins, optionally one or more diolefins, and less than 15 mole % of ethylene, and polymerization processes for producing the same. where the polymer has:

- ~~_____ a) a Dot T Peel of 1 Newton or more; and~~
- ~~_____ b) a branching index (g') of 0.95 or less measured at the Mz of the polymer;~~
- ~~_____ c) an Mw of 100,000 or less.~~

~~_____ This invention also relates a polymer comprising one or more C3 to C40 olefins where the polymer has:~~

- ~~_____ a) a Dot T Peel of 1 Newton or more on Kraft paper;~~
- ~~_____ b) a branching index (g') of 0.95 or less measured at the Mz of the polymer;~~
- ~~_____ c) a Mw of 10,000 to 100,000; and~~
- ~~_____ d) a heat of fusion of 1 to 70 J/g.~~

~~_____ This invention also relates a polymer comprising one or more C3 to C40 olefins where the polymer has:~~

- ~~_____ a) a Dot T Peel of 1 Newton or more on Kraft paper;~~
- ~~_____ b) a branching index (g') of 0.98 or less measured at the Mz of the polymer;~~
- ~~_____ c) a Mw of 10,000 to 60,000;~~
- ~~_____ d) a heat of fusion of 1 to 50 J/g.~~

~~_____ This invention also relates to a homopolypropylene or a copolymer of propylene and up to 5 mole% ethylene having:~~

- ~~_____ a) an isotactic run length of 1 to 30 (isotactic run length "IRL" is defined to be the percent of mmmm pentad divided by 0.5 x percent of mmmr pentad) as determined by Carbon 13 NMR, preferably 3 to 25, more preferably 4 to 20,~~

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- ~~b) a percent of r dyad of greater than 20%, preferably from 20 to 70 % as determined by Carbon 13 NMR, and~~
- ~~c) a heat of fusion of 70 J/g or less, preferably 60 J/g or less, more preferably between 1 and 55 J/g, more preferably between 4 and 50 J/g.~~

~~This invention further relates to a process to produce an olefin polymer comprising:~~

- ~~1) selecting a first catalyst component capable of producing a polymer having an Mw of 100,000 or less and a crystallinity of 5% or less at selected polymerization conditions;~~
- ~~2) selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 20% or more at the selected polymerization conditions;~~
- ~~3) contacting the catalyst components in the presence of one or more activators with one or more C3 to C40 olefins, at the selected polymerization conditions in a reaction zone;~~
- ~~4) obtaining the polymer.~~

~~This invention further relates to a continuous process to produce a branched olefin polymer comprising:~~

- ~~1) selecting a first catalyst component capable of producing a polymer having an Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions;~~
- ~~2) selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 20% or more at the selected polymerization conditions;~~
- ~~3) contacting the catalyst components in the presence of one or more activators with one or more C3 to C40 olefins, and, optionally one or more diolefins;~~
- ~~4) at a temperature of greater than 100°C;~~
- ~~5) at a residence time of 120 minutes or less;~~
- ~~6) wherein the ratio of the first catalyst to the second catalyst is from 1:1 to 50:1;~~
- ~~7) wherein the activity of the catalyst components is at least 100 kilograms of polymer per gram of the catalyst components; and wherein at least 20% of the olefins are converted to polymer.~~

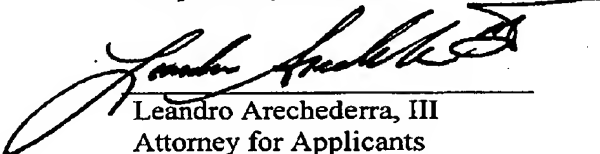
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Applicants have amended the Abstract to comply with U.S. practice. Thus, no new matter has been added.

Applicants invite the Examiner to telephone the undersigned attorney if there are any issues outstanding which have not been presented to the Examiner's satisfaction.

Respectfully submitted,

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Date


Leandro Arechederra, III
Attorney for Applicants
Registration No. 52,457

ExxonMobil Chemical Co.
Law Technology
P.O. Box 2149
Baytown, Texas 77522-2149
Phone: 281-834-2173
Fax: 281-834-2495